FROM LAND OR FROM AIR: WHY A UNIFIED ENERGY RESOURCE SCHEME IS NECESSARY WHEN THE ANSWER IS BOTH

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I. INTRODUCTION

The clear majority of energy consumption worldwide comes from petroleum, natural gas, coal, solar, wind, and hydroelectric sources.[1] Renewable sources – like wind and solar – are projected to more than double in the next quarter century worldwide, while natural gas simultaneously climbs towards being the most consumed source.[2] These two categories will account for most of the worldwide energy production if projections hold.[3] In the United States, wind power alone accounts for 5.6% of energy production.[4] This marks a 400% increase in 9 years.[5] Some commentators have claimed that success of renewable energy rests on the increase of wind power.[6] The economics of solar power are not as promising – as it retains its long-term position as emerging technology – but the positive effects on climate change and the steady decline of prices for solar photovoltaic panels are driving a surge of solar power production

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[1] U.S. ENERGY INFORMATION ADMINISTRATION, INTERNATIONAL ENERGY OUTLOOK 2017 20-21 (2017).

[2] *Id.*

[3] *See Id.*

[4] *Frequently Asked Questions*, U.S. Energy Information Administration, https://www.eia.gov/tools/faqs/faq.php?id=427&t=3 (last visited Nov. 6, 2017).

[5] K.K. Duvivier & Roderick E. Wetsel, *Jousting at Windmills: When Wind Power Development Collides with Oil, Gas, and Mineral Development*, 55 ROCKY MOUNTAIN MINERAL L. INSTITUTE 9-1, 9-2 (2009) (*citing* Energy Information Administration, *Electric Power Monthly*, Table Es1.B (2008)), https://www.eia.gov/electricity/monthly/archive/xls/epm0308.zip) (showing that wind power accounted for 1% of power production in 2007).

[6] *Id.*

in the United States.[7] The number of companies dealing in solar power increased by 347%, and the number of jobs devoted increased by 560%; in 2007, there was a growth of 50% with 70 new companies opening their doors, from 1999 to 2008.[8] Natural gas accounts for nearly forty percent of power production in the United States.[9] This is nearly double the twenty-one percent of energy production that natural gas accounted for nine years ago.[10] As demand for these three resources increase, more must be collected to meet this demand. In order to remedy conflicts between these three resource lessees – and guarantee the rights of wind and solar lessees – there needs to be a unified *resource rights scheme* in U.S. law. The appropriate model for such a scheme requires the severability of these rights, and the application of the accommodation doctrine.

The current legal regime surrounding oil and gas property rights originated in Texas and has developed over the last hundred years.[11] Texas will be in the middle of wind and solar rights as these laws progress and develop. Texas placed itself as the center of the energy industry beginning in 1894 with the discovery of oil in Corsicana.[12] While Delaware is the nexus of corporate law, Texas dominates energy law. Domestic and even international choice-of-law provisions in energy agreements often take arbitration to Texas.[13] Texas's domination of the energy market is not exclusive to oil and gas. In 2006, the state surpassed California as the largest producer of wind energy.[14] In addition to being the largest wind producer, Texas is currently the seventh highest producer of solar power, with fifty-eight percent built in the last year and plans to

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[7] Robert Glennon & Andrew M. Reeves, *Solar Energy's Cloudy Future*, 1 ARIZ. J. ENVTL. L. & POL'Y 91, 92-95 (2010) (explaining that local governments, U.S. Congress and U.S. Department of Defense are all making inroads to head towards vastly increased solar production).

[8] *Id.* at 93.

[9] U.S. ENERGY INFORMATION ADMINISTRATION, *supra* note 1.

[10] U.S. ENERGY INFORMATION ADMINISTRATION, TABLE 1.1. NET GENERATION BY ENERGY SOURCE: TOTAL (ALL SECTORS), 2007-AUGUST 2017 (Oct. 24, 2017), https://www.eia.gov/electricity/monthly/epm_table_grapher.php?t=epmt_1_01.

[11] *See infra* Part III, A.

[12] Alan J. Alexander, *The Texas Wind Estate: Wind as a Natural Resource and Severable Property Interest*, 44 U. MICH. J.L. REFORM 429, 429 (2011).

[13] *Id.* at 430.

[14] *Id.*

increase output by nearly 400% in the next five years.[15] Two and a half billion dollars has already been invested in the state by 565 companies.[16] The gigantic amount of area in the Lone Star State is going to begin to feel much smaller for mineral, wind, and solar producers as they begin to run into conflicts. Texas dealt with a similar issue during the oil boom where unregulated practices led to oversupply and a waste of oil.[17] These new energy producers are going to have to contend with established oil and gas producers, this will further complicate the issue.[18]

This note will begin in Part II by explaining mineral production (focusing on natural gas), wind generation, and solar generation, followed by comparing the real-world implications of all three resource activities on a piece of property. Part III will explain current laws regarding rights of mineral lessees, rights of solar and wind lessees, and how they can conflict. Part IV will outline the solution for these conflicts – unified rights that account for all three, and conflicts therein – as well as the policy considerations of this proposal. Whether priority is focused on preventing CO_2 emissions by increasing renewable resources, or ensuring that the free market allows each party to have equal footing, the current legal regime does not work. If mineral rights have already been severed from the surface estate, current law places a difficult obstacle for those hoping to develop solar and wind on that surface. Oil and gas operators may have surface use priority not only based on what has already been utilized, but future constructions as well.[19]

II. RESOURCE UTILIZATION

Minerals come from the ground, solar power comes from the sun, and wind is created by heat differentials in the atmosphere. This base-level explanation of these resources makes them sound completely different, but collection of all three utilizes and shares one crucial resource in different ways: each one needs land and an accompanying property right to use the surface.

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[15] *Texas Solar*, SOLAR INDUS. ASS'N, https://www.seia.org/state-solar-policy/texas-solar (last visited date).

[16] *Id.*

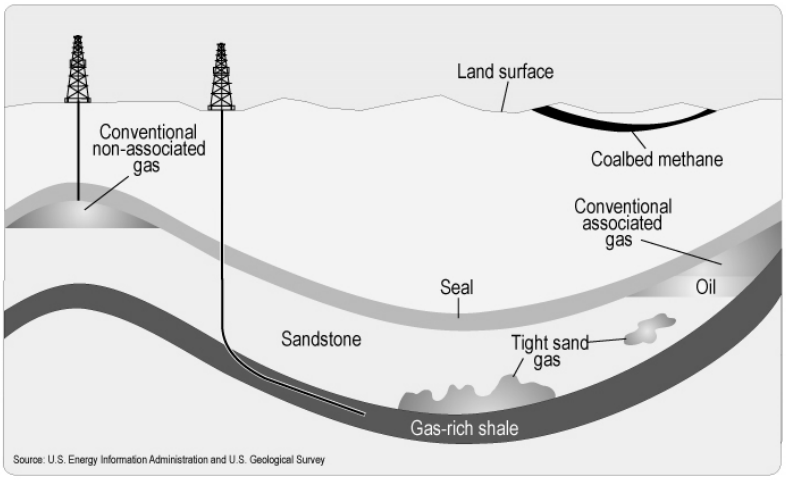
[17] Alexander, *supra* note 12, at 431-32.

[18] *Id.*

[19] *See infra* Part III, A.

A. Minerals[20]

The first *legal* step in any of these resource collections is securing a lease.[21] Before a mineral lease is secured, land must be surveyed for minerals, which is typically through seismic reading.[22] Once a location of these resources has been found and the lease secured, the actual process of removal requires production of these minerals that are found deep underneath the surface.[23] All mineral extraction require different processes, based largely on the location underground. Figure 1 shows the common locations of the most used types of mineral deposits.



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[20] The term minerals will be used as a catch-all for traditional minerals, oil and gas. The legal impact of each is different in some circumstances, but if there is any difference, that will be noted. "Minerals" is simply the legal term for the rights, and "oil and gas" is what is actually primarily being pulled out of the ground to compete with solar and wind. Increasingly, "minerals" means natural gas, as demand rises so quickly, and as such these terms will be interchangeable herein, exceptions will be noted. *See* U.S. ENERGY INFORMATION ADMINISTRATION *supra* note 1.

[21] *See infra* Part III, A.

[22] Jamie Page Deaton, *How Does Natural Gas Drilling Work?*, HOWSTUFFWORKS, https://science.howstuffworks.com/environmental/energy/natural-gas-drilling.htm (last visited Nov. 6, 2017).

[23] *Id.*

[24] U.S. ENERGY INFORMATION ADMINISTRATION, THE GEOLOGY OF NATURAL GAS RESOURCES (2011), https://www.eia.gov/todayinenergy/detail.php?id=110 (last visited Apr. 16, 2018).

Figure 1

Oil and gas deposits get trapped in pockets underground by a seal of rock that they cannot permeate through.[25] A well is drilled through the dirt and rock, and down to the seal, so that oil and gas (which naturally tries to move upward) can permeate up through the well and be collected on the surface.[26] Sometimes though, oil and gas is not trapped in a space in the rock, instead, it fills tiny holes in the rock – such as shale – and cannot naturally rise.[27] When this is the case, a well is drilled down (sometimes as far as 6,800 feet) before it is turned and travels nearly as far horizontally.[28] Water mixed with chemicals is then injected at high pressure down the well, a technique known as hydraulic fracturing.[29] Sometimes, large quantities of water and specific chemicals are mixed to reduce the friction generated by millions of gallons of water being injected down a well, in a technique called slickwater fracturing.[30] In the 1980s, vertical wells were used with some low rate gel fracking.[31] This low rate gel fracking recovered around one percent of original gas in specific types of shale. Improvements through the years have helped increase this recovery to as much as fifty-five percent.[32] Traditional vertical wells require a drill and oil and gas storage tanks, or a pipeline. These hydraulic fracturing methods (especially slickwater fracturing) require storage tanks for water, storage tanks for various chemicals, pumping equipment (to force the water down), evaporation pits, and extra

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[25] Figure 1, *supra* note 24.

[26] *How Do We Get Oil and Gas Out of the Ground?*, WORLD PETROLEUM COUNCIL, http://www.world-petroleum.org/edu/222-how-do-we-get-oil-and-gas-out-of-the-ground (last visited Nov. 6, 2017).

[27] *Oil and Gas Drilling 101*, FRACTRACKER, https://www.fractracker.org/resources/oil-and-gas-101/ (last visited Nov. 6, 2017).

[28] *Id.*

[29] Luca Gandossi & Ulrik Von Estorff, *An Overview of Hydraulic Fracturing and Other Formation Stimulation Technologies for Shale Gas Production* (2015), http://publications.jrc.ec.europa.eu/repository/bitstream/JRC98582/an%20overview%20of%20hydraulic%20fracturing%20and%20other%20stimulation%20technologies%20-%20update%202015.pdf; Susan L. Brantley & Anna Meyendorff, *The Facts on Fracking*, N.Y. TIMES (Mar. 13, 2013), http://www.nytimes.com/2013/03/14/opinion/global/the-facts-on-fracking.html.

[30] GANDOSSI & ESTORFF, s*upra* note 29.

[31] *Id.* at 11.

[32] *Id.*

processing facilities to pump jacks.[33] The overall footprint can only continue to grow as new techniques requiring additional chemicals and equipment are developed to remove a higher percentage of oil and gas.[34] As this footprint grows, so will the need and tendency to encroach on other surface users.

B. Wind

Wind as a power source has been used for at least 5,000 years, since humanity began sailing.[35] In China, windmills began to be produced in order to harness the power of the wind to pump water sometime around 200 B.C.E.[36] Between 500 and 900 C.E., Persians began to use wind power to ground grain.[37] Starting in the 1880s, wind began to be looked into as an electricity production method.[38] Today, wind energy sees the fastest growth of energy production in the United States.[39] The harnessing of wind has changed significantly in the last 5,000 years. Today, wind production uses a large footprint in order to be effective, and anyone who has seen wind farms can attest to this fact. Contemporary wind development actually requires more surface use than oil and gas development because of turbines, buffer space, other surface requirements, and transmission lines.[40]

The first factor that affects surface requirements for wind energy development is placement of the turbines themselves. The effectiveness of turbines production is based on physical surface placement and relies on a variety of factors.[41] The general optimum placement is 1,000 feet apart from one another, in rows spaced 3,000 feet, row-to-row.[42] The rows

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[33] *Oil and Gas Production Facilities Descriptions*, TEEIC, https://teeic.indianaffairs.gov/er/oilgas/restech/desc/index.htm (last visited Nov. 6, 2017).

[34] Gandossi & Estorff*, supra* note 30.

[35] K.K. DuVivier, *Animal, Vegetable, Mineral – Wind? The Severed Wind Power Rights Conundrum*, 49 WASHBURN L.J. 69, 73 (2009).

[36] *Id.*

[37] *Id.*

[38] *Id.* at 74.

[39] *Id.* (*citing* Jeffrey Logan & Stan Mark Kaplan).

[40] Duvivier & Wetsel, *supra* note 5, at 9-3.

[41] *Id.*

[42] *Id.*

themselves should be north-to-south and the turbines east-to-west.[43] This placement is very important. One study has revealed that careful placement of the rows can increase performance of windfarms by thirteen to thirty-three percent.[44] Any interference in that placement can mean a tangible loss of performance and associated economic damages.

The second factor is the footprint of a wind farm known as the buffer space.[45] This buffer space is to prevent obstructions upwind from blocking the wind that flows to the wind farm.[46] A common distance is one-half to one mile of buffer space, depending on the length of the rotors.[47] Normally, a wind developer creates a buffer by obtaining an easement on neighboring property or an agreement with the property owner as to not build obstructions. These legal agreements may not always pertain to third parties, however, it could be devastating to production if those parties were allowed to build.[48]

The third factor that increases the footprint of a wind farm is surface uses in addition to the wind towers and turbines.[49] These include: operations and maintenance facilities, substations, laydown yards,[50] roads,[51] and storage. The latter three require a larger footprint when the wind farm is being built, and that impact is generally decreased as time passes.[52] During the time period involving a larger footprint, cranes are needed to erect the turbines and larger access roads are constructed to accommodate these as well as other machinery.[53] The storage and laydown yards must be spread around a site in order to accommodate access, and can cover five to twenty acres at minimum on a site.[54]

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[43] *Id.*

[44] Christina L. Archer et al., *Quantifying the Sensitivity of Wind Farm Performance to Array Layout Options Using Large-Eddy Simulation*, 40 GEOPHYSICAL RES. LETTERS 4963, 4963 (2013).

[45] Duvivier & Wetsel, *supra* note 5, at 9-3.

[46] *Id.*

[47] *Id.*

[48] *Id.* at 9-5.

[49] *Id.* at 9-3

[50] *Id.* (explaining that laydown yards are where the windmills can be laid down, these are important so that repairs can be performed).

[51] *Id.*

[52] Paul Denholm et al, *Land-Use Requirements of Modern Wind Power Plants in the United States*, NREL (August 2009), https://www.nrel.gov/fy09osti/45834.pdf.

[53] Duvivier & Wetsel, *supra* note 5, at 9-3.

[54] *Id.*

The fourth surface use requirement is possibly the most complex, which is the need for transmission lines.[55] Minerals can be trucked or piped off a site, but wind power must be transmitted overhead or underground.[56] Collection and transmission lines do not take up space the way windmills or access roads do, but they greatly hamper any other use in those areas, such as moving equipment under the lines or drilling near them.[57]

Wind power utilizes substantially more surface area than mineral development, which has "set off an alarm among mineral owners."[58] This "alarm" doesn't even include the possibility of solar lessees and their requirements for space.

C. Solar

Solar production requires a staggering amount of land.[59] Coal, nuclear, natural gas (burning, not extracting), and geothermal production facilities require an estimated 320 to 1,280 acres to produce 1,000 megawatts of power.[60] Wind farms require 46,000 acres to produce this same amount of power in comparison to solar production, which requires roughly 6,000 acres.[61] While wind may seem like the biggest loser when it comes to footprint affecting neighbors, of those 46,000 acres an estimated 1,280 acres are unusable. In contrast, solar production – unlike all of the others – does not allow any other uses for the land.[62] Wind and solar power are often lumped together[63] as renewable resources, but have substantial differences when discussing surface interests.

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55 *Id.*

56 *Id.*

57 *Id.*

58 *Id.*

59 Ernest E. Smith et al., *Everything Under the Sun: A Guide to Siting Solar in the Lone Star State*, 12 TEX. J. OIL GAS & ENERGY L. 41, 55.

60 Glennon & Reeves, *supra* note 7, at 103.

61 *Id.* at 103-04.

62 *Id.*; Smith et al., *supra* note 59 ("Picture that: 6,000 contiguous acres, rendered completely unusable for any other purpose because the surface has now been completely covered with solar panels and supporting infrastructure—a sizable footprint indeed.").

63 *See Hybrid Wind and Solar Electric Systems,* DEPARTMENT OF ENERGY, https://energy.gov/energysaver/hybrid-wind-and-solar-electric-systems (last visited Nov. 6, 2017) (proposing a combination of the two technologies to meet energy needs).

D. Comparison

Oil, gas, wind, and solar resources all produce energy and require surface area use; but this is where their similarities end. Oil and gas production uniquely requires an actual material to be pulled out of the ground and shipped somewhere else, either by truck or by pipeline. Alternatively, wind and solar require transmission of power off the property. In the future, there may be ways to store the energy in order to fix this problem and deal with the issue of off-peak energy, but for now the transmission footprint remains.[64] Wind and mineral development both have footprints, but only solar disallows *any* other use within its footprint.[65] This means that while wind and mineral users at least have the *potential* to coexist, but if solar is in place, surface use is either completely blocked or any future development is going to be severely hampered.[66] If another user has the legal authority to use land that has solar production, the only practical solution is to physically remove the means of that production.

Wind and solar power both reduce carbon emissions by reducing the need to burn fossil fuels,[67] but oil and gas production increase emissions once the product is used. This creates a policy argument that solar and wind should have precedent over oil and gas production. Conflicts on many issues have already arisen, especially between wind and mineral lessees. Conflicts have been especially contentious when it comes to seismic testing, drilling and tank locations, and general surface use.[68] The lessees of all three are going to need to figure out a way to utilize the surface of the planet together, as some projections predict over a fifty percent increase in worldwide energy needs.[69] A solution to the different

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[64] Mark Schiller, *Hydrogen Energy Storage: A New Solution to the Renewable Energy Intermittency Problem*, RENEWABLE ENERGY WORLD, (July 16, 2014), http://www.renewableenergyworld.com/articles/2014/07/hydrogen-energy-storage-a-new-solution-to-the-renewable-energy-intermittency-problem.html (explaining a potential system of using excess energy production to split water into hydrogen and oxygen – via electrolysis – and then create fuel cells to store the energy).

[65] Smith et al., *supra* note 59.

[66] *Id.*

[67] Ralph E.H. Sims et al., *Carbon Emission and Mitigation Cost Comparisons Between Fossil Fuel, Nuclear and Renewable Energy Resources for Electric Generation*, 31 ENERGY POL'Y 1315, 1318-19 (2003); Alexander *supra* note 12 at 465.

[68] Duvivier & Wetsel, *supra* note 5, at 9-3.

[69] *EIA Projects World Energy Consumption Will Increase 56% by 2040,* U.S. ENERGY INFORMATION ADMINISTRATION, (2013), https://www.eia.gov/todayinenergy/detail.php?id=12251.

energy resources working in the same space is unlikely to ever to produce itself from a trend of industry cooperation. Any solution will need come from legal avenues.

III. CURRENT GOVERNANCE

Property law for mineral rights is well established and robust. It has been in development since the industrial revolution.[70] Wind and solar rights are far less developed, although some states have begun to answer what these rights are by looking to mineral right law as an example.[71] When mineral rights began to develop, the concept of wind and solar rights conflicting was not an issue. The conflicts were instead with the surface owner and deciding who held what rights to the surface use.[72]

A. Mineral Rights

The concept of mineral rights dates to ancient Greece, evolving into a system in England similar to ours. [73] In contemporary society, lease terms usually require one-eighth of oil or gas extracted to be paid back to the land owner as a royalty.[74] This term *royalty* is derived from the right of the sovereign to receive a mining percentage.[75] In Greece, the practice of allowing mines to be developed by a third party became popular. The Athenian state granted leases of land which required a royalty to be paid back, with the remainder kept by the lessee.[76] Later in Germany, a

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[70] Duvivier & Wetsel, *supra* note 5, at 9-4.

[71] Contra Costa Water Dis. V. Vaquero Farms, Inc., 58 CAL. RPTR. 2d 272, 278 (Cal. Ct. App. 1997).

[72] Duvivier & Wetsel, *supra* note 5, at 9-4.

[73] DuVivier, *supra* note 35, at 77.

[74] Nancy Saint-Paul, 1A SUMMERS OIL AND GAS § 30.1 (3d ed.) ("Royalties for oil are usually some fractional share of the oil produced. Traditionally, this fraction was 1/8, but leases in profitable areas may pay royalties to the lessor based on 1/6th or even 1/4th of the oil produced. The lessee may agree to deliver a share in kind, in tanks, or, more commonly, to the credit of the lessor in a pipeline to which the wells on the lease are connected. The lessor may have the option to take delivery in kind or the value of that share. The lessee may have the option to buy the lessor's royalty oil at the prevailing market price in the field. Occasionally, leases provide for a royalty on oil in the form of a share of the net proceeds of production and sale.").

[75] DuVivier *supra* note 35.

[76] *Id.* at 78.

principle known as "Bergbaufreiheit" or "free mining" developed, which recognized a mineral estate that was completely separate from the interest in agricultural production.[77] English cases carefully permitted this severability concept, noting that this flew in the face of absolute ownership by a surface owner under common law.[78] Inherited from these lines of English law, the primary defining nature of mineral rights in the United States is their *severability* along with the rights that accompany severed mineral estate ownership.

1. Severability and the Dominant-Servient Estate Doctrine

The term *minerals* "embraces all inorganic substances in or under the surface of the earth."[79] A standard lease for surface use does not carry the lease of rights to extract minerals like oil and gas.[80] Mineral rights can be severed from the surface property ownership, and this is usually done through a special mineral lease.[81] This is an extension of the common-law concept of *cujus est solum, ejus est usque ad coelum et ad inferos*.[82] Property rights are often referred to as a "bundle of sticks," because these sticks are separable, the entire bundle makes up the land, but the "mineral" stick can be removed and given to someone else, while the owner in fee simple retains all the rest.[83] This mineral lease then allows

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[77] *Id.* at 79.

[78] *Id.* at 81

[79] D. Edward Greer, *The Ownership of Petroleum Oil and Natural Gas in Place*, 1 TEX. L. REV. 162 (1923) (it is worth noting that an article distilling the then-current status of oil and gas law found its way into the very first volume of University of Texas at Austin's flagship journal).

[80] *Id.*

[81] *See generally* Bruce M. Kramer, *Conveying Mineral Interests – Mastering the Problem Areas*, 26 TULSA L.J. 175 (1990) (outlining the detailed areas where these severances go awry). *See also* Duvivier & Wetsel, *supra* note 5, at 9-4 (". . . many states have long allowed the severance of the surface estate from the mineral estate . . ."); Carlos B. Masterson, *Adverse Possession and the Severed Mineral Estate*, 25 TEX. L. REV. 139, (1946) ("The owner of the general title to land may effect a severance of the surface and mineral estates by the execution and delivery of a mineral lease, by conveyance or exception of the mineral estate, or by conveyance or exception of the surface estate. It may also be accomplished by judgment.") (footnotes omitted).

[82] Samantha J. Hepburn, *Ownership Models for Geological Sequestration: A Comparison of the Emergent Regulatory Models in Australia and the United States*, 44 ENVTL. L. REP. NEWS & ANALYSIS 10310, 10314 (2014) (explaining that this means a "person who owns land owns it from the heavens above to the center of the earth below," and that there are substantial limitations on taking these words literally).

[83] Kramer, *supra* note 81, at 175.

another (usually more sophisticated) party to extract the oil and gas from the ground. This is not generally a complete transfer. Failure to produce can mean the lessee loses the lease for lack of production.[84] It is outside the scope of this note to investigate the nuances of mineral rights and leasing procedures. It is relevant for the purpose here to explain that result of this legal interaction means that surface-land owners must work with the holders of mineral rights on that land and vice-versa. Selling mineral rights is not akin to selling the ownership of a car; it requires years of cooperation, depending on the length of the lease. Often there are conflicts. These conflicts have led to the current mineral-rights regime and continue to affect those hoping to produce wind and solar energy.

Since 1943, Texas has been a trailblazer in mineral rights law.[85] In *Harris v. Currie*, the Texas Supreme Court held that mineral rights carried with them the legal right to access the surface land for the purpose of developing those rights.[86] The court stated that the grantee was not given any *ownership* of the surface, but rather "the right to use so much of the surface as may be necessary to enforce and enjoy the mineral estate," reasoning that the ownership in the mineral rights "would be wholly worthless if the grantee . . . could not enter upon the land in order to explore for and extract the minerals . . . ."[87]

Following *Harris*, the majority of courts have ruled in favor of mineral owners, sometimes with harsh results.[88] These conflicts arise when individuals own land that had previously been severed from the minerals. The owner reasonably desires to use that land how he or she sees fit, but the mineral right lessee reasonably needs some access to the surface because (just as the *Harris* case put it) without that access, those rights are useless.[89] In 1985, the court in *Vest v. Exxon Corporation*, outlined the source of these conflicts, with essentially two different ways of looking at the situation, and two different definitions of reasonableness:

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[84] Saint-Paul *supra* note 74, at § 8:12.30 (explaining termination of mineral interest for lack of production).

[85] *See* Harris v. Currie, 176 S.W.2d 302 (Tex. 1943) (marking the first time a court had definitively ruled in favor of a mineral owner *over* the surface owner).

[86] *Id.* at 99.

[87] *Id.*

[88] Duvivier & Wetsel, *supra* note 5, at 9-4.

[89] *Id.*

> From the viewpoint of the surface owner when mineral operations are conducted all across his land, interfering constantly with his ranching or farming, the mineral use becomes unreasonable. But the mineral operator who employs the usual and customary methods of the industry views the matter differently; it would be unreasonable for him to give way to grazing animals by not developing the underlying minerals, i.e., by not drilling wells and building roads and power lines and flow lines and tank batteries. The viewpoint of these parties on reasonableness is quite different.[90]

Unfortunately for the land owner, the courts tend to view the reasonableness of the mineral right owner as the correct interpretation.[91] The law does not tend to side with the landowner when these disputes reach the courtroom.[92] This concept has become known as the dominant-servient estate doctrine.[93]

Aside from the founding state of Texas, a similar dominant-servient estate doctrine exists in some form or another in Arkansas,[94] California,[95] Colorado,[96] Illinois,[97] Kansas,[98] Kentucky,[99] Louisiana,[100] Mississippi,[101] Montana,[102] New Mexico,[103] North Dakota,[104] Oklahoma,[105] Oregon,[106] and Wyoming.[107] This Texas doctrine greatly predates the federal

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[90] Vest v. Exxon Corporation, 752 F.2d 959, 960 (5th Cir. 1985).

[91] *Id*. (*citing Vest*, 752 F.2d at 960-61) ("Sadly for the surface owner, Texas law, which governs in the present case, implies that a mineral lease gives a large measure of deference to the lessee's view of reasonableness.").

[92] Duvivier & Wetsel, *supra* note 5, at 9-4.

[93] *Id.*

[94] *Id.* (*citing* Cranston v. Miller, 208 Ark. 156, 185 S.W.2d 920 (1945)).

[95] *Id.* (*citing* California Callahan v. Martin, 43 P.2d 788 (Cal. 1935)).

[96] *Id.* (*citing* Gerrity Oil & Gas Corp. v Magness, 946 P.2d 913, 926 (Colo. 1997)).

[97] *Id.* (*citing In re* Payment of Taxes, 537 N.E.2d 358 (Ill. App. Ct. 1989)).

[98] Duvivier & Wetsel, *supra* note 5, at 9-4 (*citing* Powell v. Prosser, 753 P.2d 310 (Kan. Ct. App. 1988)).

[99] *Id.* (*citing* Lindsey v. Wilson, 332 S.W.2d 641 (Ky. 1960)).

[100] *Id.* (*citing* Rohner v. Austral Oil Exploration Co., 104 So.2d 253 (La. Ct. App. 1958)).

[101] *Id.* (*citing* Sun Oil Co. v. Nunnery, 170 So.2d 24 (Miss. 1964)).

[102] *Id.* (*citing* Stokes v. Tutvet, 328 P.2d 1096 (Mont. 1958)).

[103] *Id.* (*citing* Amoco Oil Co. v. Carler Farms Co., 703 P.2d 894 (N.M. 1985)).

[104] Duvivier & Wetsel, *supra* note 5, at 9-4 (*citing* Feland v. Placid Oil Co., 171 N.W.2d 829 (N.D. 1969)).

[105] *Id.* (*citing* Wellsville Oil Co. v. Carver, 206 Okla. 181, 242 P.2d 151 (1952)).

[106] *Id.* (*citing* Yaquina Bay Timber & Logging Co. v. Shiny Rock Mining Corp., 556 P.2d 672 (Or. 1976)).

[107] *Id.* (*citing* Holbrook v. Cont'l Oil Co., 278 P.2d 798 (Wyo. 1955)).

endorsement by the *Vest* court.[108] In 1919, the court in *Grimes v. Coodman Drilling Co.*, ruled that a family moving onto land with a pre-existing lease had no right to complain about noise at night and dirtying of their home.[109] The *Grimes* court emphasized that drilling extra wells, and making sure to develop the oil interest as much as possible, was not only the right of the mineral owner, but the prudent behavior.[110] The purchasing of property that is severed from the mineral estate brings the negative surface uses associated with that production, quite literally, to the doorstep.[111] A cause for nuisance is not going to be available to the surface owner.[112]

In 1954, the Texas Supreme Court ruled that the oil company was the "dominant estate" holder and had the legal right to use the surface as "reasonably necessary in its operation to the exclusion of . . . the owner of the servient estate."[113] Then, in 1957, the Texas Supreme Court ruled that unless there was an *express* provision requiring it, an oil and gas lease does not create an obligation that the lessee restore the surface after drilling operations are finished.[114] There are two exceptions to the dominant-servient estate doctrine: first, the mineral owner is limited to the surface that is reasonably necessary for exploration and production, and second, the surface must be used in a non-negligent manner.[115] The dominant-servient estate doctrine creates a massive imbalance of surface rights, limiting the lessee only by ruling out negligence and unreasonable

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[108] Vest v. Exxon Corporation, 752 F.2d 959, 961 (5th Cir. 1985)).

[109] *See generally* Grimes v. Goodman Drilling Company, 216 S.W. 202 (Tex. Civ. App. Fort Worth 1919).

[110] *Id.* at 204.

[111] *Id.* ("As appellant purchased the premises burdened with the terms of the lease, he is in no position to complain of conditions produced by appellees, such as are usual and customary during the drilling of an oil well. If he is presumed to have known, as we think he is, that the lessees had the right to sink a well on lot 6 of the block, he is further presumed to have known that conditions would naturally arise during the drilling of said well which would make the use of the premises as a home disagreeable, inconvenient, and perhaps dangerous. Appellant must have known that in the drilling of a well a derrick was essential, and that it would be necessary to have an engine and boiler placed on the lot and a slush pit.").

[112] *Id.*

[113] Warren Petroleum Corp. v. Martin, 271 S.W.2d 410, 412 (Tex. 1954).

[114] Warren Petroleum Corp. v. Monzingo, 304 S.W.2d 362, 363 (Tex. 1957).

[115] Duvivier & Wetsel, *supra* note 5, at 9-4.

use of the surface. This imbalance gave rise to the accommodation doctrine as Texas attempted to make the relationship a bit fairer.[116]

2. Accommodation Doctrine

The accommodation doctrine (or alternative means) applies to surface uses which are already in place by the surface owner. In *Getty Oil Co. v. Jones*, the surface owner had an irrigation system that was in place prior to drilling.[117] The mineral lessee erected pumps which blocked the full use of these sprinklers.[118] The court determined that this was unreasonable and ruled in favor of the surface owner.[119] The accommodation doctrine has two strict requirements: first, the surface owner must prove that the pre-existing use is the only reasonable means of using the land, and second, the mineral lessee must have a reasonable alternative that would not interfere with that previous use. Commentators have suggested that the accommodation doctrine should be extended at least to wind production, and that Texas is the most appropriate forum for first adoption.[120]

Since the *Getty* decision, directional drilling has been developed.[121] Directional drilling allows a well to reach reserves horizontally despite the fact that it may be easier to reach vertically. This method does reduce the overall oil and gas development footprint, by allowing one drill to reach multiple areas.[122] Horizontal drilling has expanded the accommodation doctrine, as there is now a reasonable way of reaching areas underneath a previous existing surface-use.[123] If projected income meets the potential costs of horizontal drilling (or any alternative method), it can be found to be a reasonable alternative according to *Valence*.[124]

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116 *Id.*

117 470 S.W.2d 618, 619-21 (Tex. 1971).

118 *Id.*

119 *Id.*

120 *See* Alexander, *supra* note 12, at 463-65.

121 *See* Hobart M. King, *Directional and Horizontal Drilling in Oil and Gas Wells*, GEOLOGY.COM, http://geology.com/articles/horizontal-drilling/ (last visited Nov. 6, 2017).

122 *Id.*

123 *See* Texas Genco, LP v. Valence Operating Co., 187 S.W.3d 118 (Tex. App. 2006).

124 *Id.*

Some other states have adopted Texas's accommodation doctrine including Arkansas,[125] Colorado,[126] New Mexico,[127] North Dakota,[128] Utah,[129] and Wyoming.[130] They have added into considerations the potential injury to land, utility of the land, actual date of operations, terms in severance deeds, benefits, and public interest.[131] As technologies continue to develop, the amount of negligent actions by mineral lessees could increase while accommodation can become more reasonable. This shift could expand or contract these well-founded doctrines. The legal regime surrounding these conflicts between surface and mineral owners has created the need for these two doctrines to protect the rights of both when sharing the same physical plot of land. These doctrines do not address another type of common conflict, between mineral rights owners of adjacent property where oil and gas is able to flow between the two underground.

3. Rule of Capture

First-year law students in the United States almost universally study (or are subjected to) the infamous fox case of *Pierson v. Post*, and the property rights implications it discusses.[132] *Pierson* rules that animals – classified as *farae naturae* – are not owned until they are actually captured and held. Prior to that physical capture, they belong to no one and roam freely.[133] It may not seem that oil and gas law easily attaches to this

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[125] Duvivier & Wetsel, *supra* note 5, at 9-4. (*citing* Diamond Shamrock Corp. v. Phillips, 511 S.W.2d 160 (Ark. 1974)).

[126] *Id.* (*citing* Colo. Rev. Stat. § 34-60-127; *See* Gerrity Oil & Gas Corp. v. Magness, 946 P.2d 913 (Colo. 1997)).

[127] *Id.* (*citing* Amoco Prod. Co. v. Carter Farms Co., 703 P.2d 894, 896 (N.M. 1985)).

[128] *Id.* (*citing* Hunt Oil v. Kerbaugh, 283 N.W.2d 131 (N.D. 1979)).

[129] *Id.* (*citing* Flying Diamond Corp. v. Rust, 551 P.2d 509 (Utah 1976)).

[130] *Id.* (*citing* Mingo Oil Producers v. Kamp Cattle Corp., 776 P.2d 736 (Wyo. 1989)).

[131] *Id.* (*citing* Phillip E. Norvell, *Developing Lands Characterized by Separate Ownership of Oil and Gas and Surface Minable Coal and Uranium—The Other Side of Acker v. Guinn and Its Progeny*, 33 OIL & GAS INST. 193, 218 (1982)).

[132] Jackson v. Bradt, 2 Cai. R. 169, 175 (N.Y. Sup. Ct. 1805).

[133] *Id.* at 180 ("If the first seeing, starting, or pursuing such animals, without having so wounded, circumvented or ensnared them, so as to deprive them of their natural liberty, and subject them to the control of their pursuer, should afford the basis of actions against

principle, but going back to the nineteenth century, courts have adopted the rule of capture to address the issue of oil or gas naturally moving from one piece of property to another through underground rock formations.[134] In 1889, the court in *Westmoreland & Cambria National Gasoline Co. v. De Witt* held that title of these minerals goes to the first to legally extract them using *Pierson* and the analogy of capturing a fox which could go back and forth between each owner's property.[135] The *Westmoreland* court held:

> If an adjoining, or even a distant, owner, drills his own land, and taps your gas, so that it comes into his well and under his control, it is no longer yours, but his. And equally so as between lessor and lessee in the present case, the one who controls the gas—has it in his grasp, so to speak—is the one who has possession in the legal as well as in the ordinary sense of the word.[136]

This rule has since been approved of in all oil-producing states.[137] Traditional rule of capture led to chaos, danger, and waste for at least fifty years, but states began to address these issues through legislating various fixes[138] such as unitization.[139]

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others for intercepting and killing them, it would prove a fertile source of quarrels and litigation.").

[134] Westmoreland & Cambria Nat. Gas. Co. v. De Witt, 18 A. 724, 725 (Pa. 1889) ("Water and oil, and still more strongly gas, may be classed by themselves, if the analogy be not too fanciful, as minerals feroe natures. In common with animals, and unlike other minerals, they have the power and the tendency to escape without the volition of the owner. Their 'fugitive and wandering existence within the limits of a particular tract was uncertain,' as said by Chief Justice AGNEW in Brown v. Vandegrift, 80 Pa. St. 147, 148. They belong to the owner of the land, and are part of it, so long as they are on or in it, and are subject to his control; but when they escape, and go into other land, or come under another's control, the title of the former owner is gone. Possession of the land, therefore, is not necessarily possession of the gas.").

[135] *Id. See* DuVivier, *supra* note 35, at 90.

[136] *Westmoreland*, 18 A. at 725.

[137] DuVivier, *supra* note 35, at 90.

[138] *Id.* at 91 ("Gradually, oil recovery improved as legislators experimented with various techniques to avoid waste such as controlling the spacing of extraction wells,167 mandating pooling of small tracks into an acreage sufficiently large to secure a well permit,168 recognizing correlative rights between owners,169 and ultimately, in some instances, mandating unitization.").

[139] *Id.* at 91-92 ("Unitization is the joint, coordinated operation of all, or a substantial *92 part, of a reservoir as a single unit by all the different operators holding leases in the field.").

There is a clear similarity between oil, gas, solar, and wind when discussing the natural ability of each to cross property lines. Aside from these direct similarities, there are obviously functional differences that make each unique.[140] As explained in the next section, the explosion of wind and solar development has occurred right next to the oil and gas legal regimes that have had nearly a century to develop, a timeframe that producers of wind and solar energy do not have the luxury of enjoying.

B. Wind and Solar Rights

The slow ebb and flow that led to oil and gas law development cannot be mirrored by wind and solar rights. The sheer scale of wind and solar production already in place requires a quicker solution.[141] Solar has very little jurisprudence or academic solutions suggested. Some have argued whatever the end result, wind and solar require a similar treatment.[142] The first key question for wind and solar production rights going into the future is whether wind and solar rights will be severable in the same manner as mineral rights. The second issue will be what rights are afforded to the holders of those severed wind and solar estates.

1. Severability

Wind leases are typically written with the assumption that the rights are severable.[143] At least one authority arguing against the premise that wind rights should mirror mineral rights has stated that "landowners appear not only to have authority over the wind that flows across their surface estates, but also authority to sever the wind rights from those surface estates."[144] This is different from the severability of mineral rights; whose severances are backed by protections of the aforementioned legal regimes.[145] The debate on whether those protections should be extended to wind and solar power have played out primarily by academic

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[140] *See supra* Part II. D.

[141] *See* supra Part I.

[142] DuVivier, *supra* note 35, at 98 ("Progress toward treating wind rights in a manner similar to solar rights may be a step in the right direction. However, few states have effective solar right regimes . . .").

[143] Alexander, *supra* note 12, at 440.

[144] DuVivier, *supra* note 35, at 85.

[145] *See supra* Part III A.

commentators.[146] Some courts, namely in New Mexico and California, have approved the severability of wind, but in the precedent setting state of Texas no such case has been addressed.[147] The *Contra Costa Water Dist. v. Vaquero Farms, Inc.* decision in California likened wind production to oil and gas development.[148] The respondent argued that wind production rights are held by a fee interest because no other California cases had weighed in on the issue.[149] The court eviscerated the argument, ruling that because wind power rights are "substantial rights" able to be bought and sold in the marketplace, a lease which severs these rights is valid.[150] However, the *Contra Costa* decision was a condemnation proceeding. The issue has been raised as to whether or not California courts would approve of this rule more broadly.[151]

New Mexico approached the issue of whether property (the principle value of which is a wind farm) can be partitioned in the *Romero v. Bernell* case.[152] The court held that wind energy can be severed, citing the *Contra Costa* court.[153] The court made the important distinction that wind power is not directly analogous to oil and gas:

> Strictly speaking, the ownership of wind is a misnomer. Wind, in and of itself, does not appear to be susceptible of any ownership. It is not like oil and gas in place where there is a deposit of hydrocarbons which can be reduced to possession by one or more mineral owners of the tracts under which the hydrocarbon deposit resides. Wind itself is more akin to a wild animal or percolating waters which must first be reduced to possession before they have value. To reduce wind to

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[146] *Compare* Alexander, *supra* note 12 (arguing that wind should be a severable interest, protected by the accommodation doctrine, analogous to mineral rights.), *with* DuVivier, *supra* note 35, at 98 (discussing severability of wind which mirrors mineral severability statutes, and the shortcomings of it; advocating instead for the current method of severance by contract on a case-by-case basis until a more fitting solution can be found, concluding that "[i]nstead of applying past regimes to wind, elected officials should study these models for pitfalls to avoid. Future legislation should be tailored to the unique issues raised in developing each specific alternative renewable resource. By taking a proactive approach, we can hope to convert inefficient practices of the past into the productive alternative energy solutions of our future.").

[147] Alexander, *supra* note 12, at 451-52.

[148] Contra Costa Water Dis. v. Vaquero Farms, Inc., 68 Cal. Rptr. 2d 272, 278 (Cal. Ct. App. 1997).

[149] *Id.* at 277.

[150] *Id.*

[151] *Id.*; *See* Alexander, *supra* note 12, at 453.

[152] Romero v. Bernell, 603 F. Supp. 2d 1333, 1335 (D.N.M. 2009).

[153] *Id.*

> "possession" appears to require that it be focused on driving the fins of a windmill which turn a generator and ultimately generates electricity. Then and only then can wind a) be reduced to possession and b) have value. [154]

The *Romero* decision simultaneously approves of severed wind rights, and yet disapproves of a direct comparison to oil and gas. At the close of the *Romero* decision, the court appears to rectify this conflict, categorizing the minerals as being "*in situ.*"[155] The court does not appear to be stating there is a conflict in applying mineral rights to wind power, rather than the actual resources which are very different.[156] This speculative right that the *Romero* court refuses to attach to the land – along with the direct argument that wind is not the same as oil and gas – has some commentators worried. This may be a harmful case for the argument that wind power should be severable.[157] The court may have used these words to prevent this interpretation, but this is certainly not a forgone conclusion.[158]

North Dakota and South Dakota have taken a different approach to addressing the severability of wind by prohibiting severance through the legislature.[159] This makes the Dakota's laws the most concrete, at least until Texas weighs in on the issue.[160] Some commentators argue that this is the right outlook; that wind needs its own regime, rather than simply copying oil and gas law.[161]

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[154] *Id.* (*citing* Terry E. Hogwood, *Against the Wind*, 26 TEX. OIL, GAS AND ENERGY RESOURCES L. Section 6 (Dec. 2001) (footnotes omitted).

[155] *Id.* at 1336. (*In situ* in this use means in the place or position it is currently in, the *Romero* court was categorizing oil and gas while it is underground as being different from uncaptured wind, which roams freely).

[156] *See id.*

[157] Alexander, *supra* note 12, at 453.

[158] *See* DuVivier, *supra* note 35, at 93-95.

[159] *Id.*; *See* N.D. Cent. Code §17-04-04 (2009) ("[A]n interest in a resource located on a tract of land and associated with the production of energy for wind power on the tract of land may not be severed from the surface estate."); S.D. Codified Laws §43-13-19 (2004) ("No interest in any resource located on a tract of land and associated with the production or potential production of energy from wind power on the tract of land may be severed from the surface estate. . .").

[160] *Id.* at 429-31.

[161] DuVivier, *supra* note 35, at 98.; *See also* Lisa Chavarria, *Wind Power: Prospective Issues*, 68 TEX. B.J. 832 (2005) (arguing that the similarities between the oil

2. Rights to Use

If the law develops to allow wind and solar users to have similar severable rights to a mineral estate, the five crucial rights inherited would be: 1) development, 2) leasing, 3) receiving of royalties, 4) receiving of bonus payments and 5) receiving of delay rentals.[162] While each of these are important for solar and wind producers, the right to develop is crucial. Despite this fact, current law does not guarantee it. Without a severable interest, wind developers, solar developers, and landowners have only the protection of the contract itself.[163]

Unfortunately, there has been very little judicial review of wind and solar leases. New wind leases appear to attempt to accomplish two goals: first, to mirror mineral leases as closely as possible (if it works, it works),[164] and second, to restrict the negative impact of new mineral leases on the property.[165] One sample lease proposes forcing the accommodation doctrine on future oil and gas lessees.[166] Wind and solar lessees do have needs that are not met with standard oil and gas leases, however, both have a massive footprint in comparison, and as discussed above, solar development does not allow sharing of that footprint with anyone else.[167] Wind and solar leases are also unique in the amount of money that must be devoted to their initial production. Wind farms require substantial infrastructure, foundations for turbines, roads, weather

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and gas industry and wind industry – coupled with the similarities in how wind is currently being handled legally – demand a similar solution).

[162] *Id.* at 454-55 (*citing* Altman v. Blake, 712 S.W.2d 117, 118 (Tex. 1986)); Chavarria *supra* note 161, at 837.

[163] Alexander, *supra* note 12, at 454.

[164] Duvivier & Wetsel, *supra* note 5, at 9-10.

[165] *Id.* ("(b) O&G LESSEE will not place O&G Facilities on the Subject Premises without first consulting with WIND LESSEE in order to determine a location for such items that will not (or will as little as reasonably possible without increasing O&G LESSEE's cost or risk)").

[166] *Id.* ("2. Oil and Gas Operations. O&G LESSEE agrees that all exploration for and development and production of oil, gas and other gaseous substances that can be produced from a well on the Subject Premises will be conducted in a manner that will reasonably accommodate WIND LESSEE's activities, and, insofar as is reasonably possible and without increasing the cost or risk (including economic risk) of such oil and gas development activities, will not interfere with the operation of the Wind Facilities. Without limiting the generality of the foregoing, and in addition to all other covenants and obligations imposed by law, O&G LESSEE agrees as follows").

[167] Becky H. Diffen, *Energy from Above and Below Who Wins When a Wind Farm and Oil & Gas Operations Conflict*, 3 TEX. J. OIL & ENERGY L. 240, 242 (2008); Ernest E. Smith et al., *supra* note 59.

monitoring equipment, operational buildings, management buildings, repair buildings, laydown areas, substations to manage the power, and transmission lines.[168] This means that the capital infrastructure to get started is a much greater risk. Wind leases must predict potential downfalls and prevent them in order to get the ball rolling with developers, investors, and utility companies.[169]

C. Conflict

The conflict between mineral, wind, and solar leases arises with the footprints of each overlapping with one another. Each type of development requires access to the surface, which is purchased when the rights themselves are severed. The conflict arises when two or more need access to the same surface area, or when one surface use interferes with another. The mineral estate is the dominant estate across the United States, and it would appear that an oil and gas operators can utilize this status to block wind and solar projects.[170] Wind and solar developers can negotiate the rights they need to operate unimpeded, but only if they are the first to lease from an owner. This is incredibly difficult when so many fees have already severed mineral rights; a wind or solar producer hoping to lease the respective rights cannot negotiate away rights from the third-party mineral lessee, whether they are producing or not. The conflict is deepened by the nature of wind and solar production, utilizing such a large footprint, and capturing a resource that is not a physical capture.[171] Even the current system allows for a scenario where an owner of severed wind-rights transfers those rights to a third-party wind producer, whose project is halted by a mineral producer; all of which is excluding the original land-owner.[172] A comprehensive solution will need to protect land owners, wind developers, solar developers, and mineral developers. Accomplishing this, while still making the best use of resources, will be the true challenge.

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168 Diffen, *supra* note 167, at 241.
169 *Id.* at 240-41.
170 Chavarria, *supra* note 161, at 840.
171 Alexander, *supra* note 12, at 455.
172 *Id.*

IV. REGULATORY SOLUTION

The only way to guarantee the rights of mineral, solar, and wind lessees are preserved is to create one unified set of rights which accounts for all three and their potential conflicts. The two primary questions this unified resource scheme should answer includes first, whether wind and solar rights are severable, like mineral rights; and second, if the accommodation doctrine should apply when there is more than one severed interest on a single estate.

A. Unified Resource Rights

The first goal of this proposed regime is to establish the severability of wind and solar rights. The *Contra Costa* court agreed with counsel's arguments that:

> "[t]he right to generate electricity from windmills harnessing the wind, and the right to sell the power so generated, is no different, either in law or common sense, from the right to pump and sell subsurface oil, or subsurface natural gas by means of wells and pumps." . . . "[T]he argument that harvesting windpower [*sic*] somehow requires greater usage of the surface than harvesting oil and gas resources defies common sense to anyone who has seen a field of oil derricks."[173]

The purpose of this severability – and its status as the dominant estate – is fostered with the economic derivation of these resources. As commentators and the *Contra Costa* court point out, to not extend the same protection to wind rights would be a waste.[174] The severability of solar rights is a much more drastic departure from current discussions.[175] Nebraska recognizes leases that enforce unimpeded solar access, and requires land records indicate such a lease.[176] Allowing a severable solar right would be a more comprehensive protection than Nebraska's solution. This solution would be very similar to most solar easements in Nebraska in terms of controlling the land-owner and the solar developer, however, they would not be subject to lease terms. This would expand legal protections to wind and mineral developers as third parties once the

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[173] Contra Costa Water Dist. v. Vaquero Farms, Inc., 58 Cal. Rptr. 2d 272, 278 (Cal. Ct. App. 1997).

[174] *Id.*; Chavarria, *supra* note 161, at 840; Alexander, *supra* note 12.

[175] *See* Sara C. Bronin, *Solar Rights*, 89 B.U. L. REV. 1217 (2009).

[176] *Id.* at 1236-37 (*citing* Neb. Rev. Stat. § 66-911.01).

solar rights have been severed. The current mineral rights regime was created to address the imbalance between mineral operators and land owners, and prevent each agreement from being completely decided by the terms of the lease.[177] Surely the same protection is necessary for wind and solar developers; it certainly is needed to protect them from each other.

This can be accomplished by cementing the current mineral rights accommodation doctrine and expanding it to address solar and wind producers. Currently there are two categories of *stick owners*, which are the surface owner and the mineral owner. Instead, there should be surfaces owners and resource owners. The accommodation doctrine has been suggested as a solution for wind right conflicts. [178] This proposal aims to extend this reasoning to solar conflicts as well. The policy goal of maximizing solar and wind production – and the risk of not utilizing these resources – mirror the problems Texas faced 100 years ago when it developed the policies for oil and gas rights that provide the basis for these regimes across the country.[179] Making these rights severable and applying the accommodation doctrine will help to clarify severances that have already been made, cure inevitable conflicts, and give landowners an interest that they can more easily transfer without impeding their current surface-use.

B. Conflict Resolution

The issue with the current accommodation doctrine is the preference given to mineral lessees and the presumption of reasonableness. The accommodation doctrine can be applied to multiple resource owners by making one simple change: substituting the mineral owner for *the last to develop*. If all resource owners are treated the same, it only matters who first takes advantage of a surface use.

Example One: A wind farm has been developed, and a natural gas company that owns the mineral rights wishes to pump upwind of a row of windmills in a way that will obstruct wind production. The first question to ask is if there an alternative means of developing the land. Substituting the wind rights owner for the surface owner, windmill use is essentially

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177 *See generally* Harris v. Currie, 176 S.W.2d 302 (Tex. 1943)

178 Alexander, *supra* note 12.

179 *Id.* at 465.

the only way to develop that right in the land. Second, we must answer whether there is a reasonable alternative means of extracting the natural gas. If it is possible to drill horizontally, and the projected income is enough to make it reasonable, then the mineral owner would have to use that method. Alternatively, if this is impossible, the natural gas pump would be allowed to block the least number of windmills possible to reasonably develop their rights. This scenario is analogous to the *Getty Oil Co. v. Jones* case responsible for the accommodation doctrines creation.[180] The intent of the proposed solution is to be able to substitute a wind developer for the plaintiff in *Getty* and get the same equitable result.

Example Two: An oil company is pumping for oil and wind. The company purchases the wind rights to the property and needs to run overhead lines to deliver power which will be dangerously close to a Christmas tree.[181] In this scenario, the oil company would substitute for the surface owner. Once again, the first factor becomes illusory: the pumping of oil is naturally going to be the exclusive means of developing the right owned. The second factor asks if the wind company has a reasonable alternative to the overhead wires. Likely they would be able to bury the wires (if that did not interfere with the wellbore), simply run them somewhere else, or run them higher. This would mean an increased cost for the wind company, but as the last to develop, they would be forced to accommodate the oil production, even if it costs them more.

Example Three: A solar company has the eastern quarter of a plot completely developed for a solar farm, while a wind company purchases the wind rights. The wind company now wants to build a row of windmills that will require an access road that currently is being used for the storage of equipment to repair the solar farm. Skipping directly to the relevant factor, does the wind company have a reasonable alternative to this road? For arguments sake, assume they do not. In that scenario, they should be able to build the road. The proposed extension of the accommodation doctrine would treat all resource producers equally. The solar company would be forced to move the storage in order to allow wind development. Under the current accommodation doctrine, an oil and gas developer would be able to force the removal of the storage as well. The proposal would extend this to solar and wind developers.

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[180] Getty Oil Co. v. Jones, 470 S.W.2d 618, 619-21 (Tex. 1971).

[181] Mesa G., *The Difference between a Wellhead & Christmas Tree*, OIL & GAS BLOG (Aug. 29, 2014), https://www.croftsystems.net/oil-gas-blog/the-difference-between-a-wellhead-christmas-tree.

Example Three may seem like an unjust result, but squared with the current accommodation doctrine it makes sense. The accommodation doctrine gives a mineral right owner the right to do whatever they reasonably can in order to develop that right. This may seem to disfavor the surface owner, but that evaluation misses one key right the surface owner always has: a surface owner of property that is not severed can choose not to sell their mineral rights, and do whatever he or she desires on the surface; or negotiate specific uses via lease when then the severance takes place. The first mineral, solar, or wind lessee on a specific property certainly has the option to negotiate terms upon initial lease. The accommodation doctrine tends to disfavor those surface owners who fail to preserve what they need to accomplish on a piece of land when selling the rights. Similarly, a unified resource doctrine should disfavor those resource lessees who are first, but fail to pre-negotiate the rights of others. This incentivizes settling these issues via lease and never needing to invoke the doctrine at all.

Mineral right severance is incredibly common, especially in areas where wind and solar will be the most effective. Those leases – unless very recently created – are unlikely to account for wind and solar uses, which could put those lessees at a disadvantage if the surface owners sell those rights to a third party. The hypothetical surface owner owns those unpurchased rights to build solar panels and wind farms. It is reasonable to require oil and gas operators who are particularly concerned with interference to negotiate with surface owners to restrict those rights being passed to wind and solar producers, even if added compensation is required.

V. CONCLUSION

Mineral extractors, especially oil and gas operators, have enjoyed very little restriction on their actions conflicting with surface owners' uses.[182] This is perhaps the way it should be. The policy behind this regime is incentivizing the extraction of these minerals which drive and increase the overall economy. Assuming the policy argument that maximizing utilization of energy resources is unopposed, renewable resources such as wind and solar should naturally have the same benefit.

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[182] *See supra* Part III. A. 1.

The argument that *oil and gas production should be fostered by law* does not exist unopposed. There currently is no valid scientific argument against the existence of global warming, or that the warming is being caused – at least partially – by CO_2 emissions.[183] These emissions come from the burning of fossil fuels such as oil and gas.[184] Carbon Dioxide emissions, and the warming effect they bring, will lead to rising sea levels, arctic ice disappearance, and continued extinction of species around the world.[185] While it may be too late to completely reverse global warming through reduction of CO_2 emissions, reduction will have a tangible effect on the atmosphere.[186] Many of the current methods of attempting to reduce these emissions have been ineffective,[187] and actually effaceable proposals are unlikely.[188] It is outside the scope of this note to address the legal issues surrounding global warming and CO_2 emissions. These issues show a second need for the proposal herein. If there is any type of resource production that public policy should support being able to legally maximize, certainly it should be the types of energy production that help the planet and humanity, rather than the driving force of destruction for each.

Aside from the doom and gloom of global warming, the current system can be viewed as deeply flawed. Focusing instead on the legal

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[183] Dominick J. Graziano, *Global Warming: An Introduction to the State of the Science and a Survey of Some Legal Responses*, 79 FLA. B.J. 34, 34 (2005).

[184] *Id.*

[185] *Id.* at 35.

[186] J. Brent Marshall, *Geoengineering: A Promising Weapon or an Unregulated Disaster in the Fight Against Climate Change*, 30 J. LAND USE & ENVTL. L. 183, 187-88 (2018).

[187] *Id.*

[188] Authors of alternative options often appear pessimistic in the actual likelihood of their enactment. *See* Graziano *supra* note 183 (arguing that the most effective way of legally responding to emissions is to go after individual parties under public nuisance theory, and stating that a more direct solution seems unlikely because "[c]urrently, there does not appear to be the political will or leadership in Washington to pass legislation addressing greenhouse gas emissions within the United States. Nonetheless, as more of the public comes to accept global warming as a fact, federal action will likely ensue," without any justification for when and how); *See also* Arnold W. Reitze, Jr. *Federal Control of Carbon Dioxide Emissions: What are the Options*, 36 B.C. ENVTL. AFF. L. REV. 1, 76 (2009) (concluding that "[c]ongress needs to take a more responsible position concerning climate change and enact comprehensive legislation aimed at lowering carbon emissions. A carbon tax would be the best approach, but such legislation may be politically impossible to enact," or as an alternative Congress can "nullify *Massachusetts v. EPA* by creating an effective new program to reduce our dependence on carbon-based fuels without harming the economy" but admitting "[t]his may be overly sanguine.").

regime surrounding these resources, the current system does not treat all parties fairly, or serve great good. The proposed solution above does not rely on any intrinsic superiority of renewable resources. From an economic point of view, the maximum possible benefit should be fostered. This is a bipartisan solution though. Very few would argue against the lowering of greenhouse gases and against utilizing land to add to the economy as much as possible. If mineral, wind, and solar rights owners are able to work together in harmony, this will allow the maximum extraction of energy from a given plot of land. Even if a fraction of the natural gas cannot be pumped, some of the wind is blocked, some land cannot have solar panels, or an irrigation system must be moved, the overall societal benefit will be at a maximum by pushing for cooperation. As time goes on, wind and solar technologies will continue to increase in efficiency and effectiveness as well. It is crucial as this development of technologies takes place that the mistakes of waste and conflict that plagued early oil and gas production does not harm the future. The more these renewable resources are utilized, the less fossil fuels will continue to be the dominant resource utilization of land. It is imperative that a solution such as this one ensures that wasteful conflicts do not arise, conflicts which are a detriment to society as a whole.